LISTING OF THE CLAIMS

This listing of claims, including the amendments indicated below, is intended to replace all prior versions, and listings, of claims in the application

1. (Currently Amended) A ~~rotary~~ gear driven sprinkler ~~head~~ comprising:

a main housing having a main fluid inlet;

a turbine assembly mounted in the main housing, wherein the turbine assembly includes:

a turbine housing having an inlet ~~port~~ and ~~at least one~~ an outlet, ~~port~~ and defining a rotor chamber therein;

a rotor rotatably mounted in the turbine housing, wherein the rotor is rotated by a flow of fluid through the turbine housing; and

a flow control valve slidably engaged with the turbine housing to move between a first position and a second position, wherein the second position allows fluid flow through the main housing to bypass the inlet ~~port~~ to the turbine housing and throttles the ~~at least one~~ outlet ~~port~~ of the turbine housing.

2. (Currently Amended) The ~~rotary~~ sprinkler ~~head~~ according to claim 1, wherein

the main housing includes a valve seat, and

the flow control valve includes

a fluid contact surface for engaging the valve seat in the closed position, and

a sleeve disposed around the turbine housing for throttling the ~~at least one~~ outlet ~~port~~ of the turbine housing.

3. (Currently Amended) The ~~rotary~~ sprinkler ~~head~~ according to claim 2, further comprising a third position of the flow control valve between the first and second positions such that the sleeve does not throttle the ~~at least one port~~ outlet of the turbine housing when the flow control valve moves between the first and third positions, and increasingly throttles the ~~at least one~~ outlet of the turbine housing when the flow control valve moves from the third position to the second position.

4. (Currently Amended) The ~~rotary~~ sprinkler according to claim 3, wherein the turbine assembly is constructed such that the rotor rotates at a constant speed as the fluid flow through the turbine housing increases from a rate which places the flow control valve in the third position to a rate which places the flow control valve in the second position.

5-6. (Canceled)

7. (Currently Amended) The ~~turbine assembly~~ sprinkler according to claim [[6]] 15, wherein the ~~throttling mechanism~~ second element is a sleeve which surrounds the turbine housing and is slidably engaged ~~with the housing~~ therewith.

8-11. (Canceled)

12. (New) A gear driven sprinkler comprising:

a sprinkler head;

a main housing having a main fluid inlet;

a turbine assembly mounted in the main housing, and coupled to drive the sprinkler head, wherein the turbine assembly includes:

a turbine housing defining a rotor chamber therein;

a rotor mounted in the turbine housing which is rotated by a flow of fluid through the turbine housing from the main fluid inlet; and

a flow control valve movable between a first position at which the valve has substantially no effect on the flow of fluid through the turbine housing, and a second position at which the valve allows a portion of the fluid flow from the main fluid inlet to bypass an inlet to the turbine housing and restricts the flow of fluid through an outlet of the turbine housing.

13. (New) The sprinkler according to claim 3, wherein the flow control valve includes:

a first element operative to close a bypass path around the turbine housing when the valve is in the first position, and to open the bypass path when the valve is in not the first position; and

a second element which partially blocks the outlet of the turbine housing to control the flow of fluid through the turbine housing when the valve is in the second position.

14. (New) The sprinkler according to claim 13, wherein:

the main housing includes a valve seat, and

the first element of the flow control valve includes a fluid contact surface which cooperates with the valve seat to open and close the bypass path.

15. (New) The sprinkler according to claim 13, wherein:

the turbine housing outlet is comprised of a fluid passage permitting fluid flow from the rotor chamber to the sprinkler head; and

the second element is a member movable relative to the turbine housing outlet to vary the outlet flow area.

16. (New) The sprinkler according to claim 12, wherein the flow control valve is movable by a first preset level of force transmitted by fluid flowing from the main fluid inlet from the first position to the second position.

17. (New) The sprinkler according to claim 16, wherein the flow control valve is movable by a second preset level of force less than the first preset level from the first position to a third position intermediate the first and second positions such that the flow of fluid through the outlet of the turbine housing is not restricted when the flow control valve moves between the first and third positions, but is increasingly restricted when the flow control valve moves from the third position toward the second position.

18. (New) The sprinkler according to claim 17, wherein the preset levels of force are determined by a resilient member which biases the valve toward the first position.

19. (New) The sprinkler according to claim 17, further including a limit member which prevents the valve from traveling beyond the second position.

20. (New) The sprinkler according to claim 12, wherein the flow control valve is movable to a third position intermediate the first and second positions such that the flow of fluid through the outlet of the turbine housing is not restricted when the flow control valve moves between the first and third positions, but is increasingly restricted when the flow control valve moves from the third position toward the second position.

21. (New) A method of operating a rotary sprinkler at a constant turbine speed, comprising:
delivering a flow of fluid from a supply to a turbine assembly mounted in the sprinkler;
driving a rotor in the turbine assembly by contacting the rotor with the fluid as it flows through the turbine assembly;
diverting a portion of the fluid flow to bypass the turbine assembly in response to a force generated by the flowing fluid exceeding a preset minimum level; and
increasingly restricting fluid flow through a fluid outlet from the turbine assembly in response to a force generated by the flowing fluid exceeding a second preset level above the preset minimum level.

22. (New) The method according to claim 21, further including the step of limiting the extent to which the turbine assembly outlet is restricted such that no further restriction occurs even if the force continues to increase, whereby a selected maximum turbine speed is obtained.